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## A Needs Assessment for Development of an Interpreter Services Educational Tool for CRNAs

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A Needs Assessment for Development of an Interpreter Services Educational Tool for CRNAs

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DePaul University

## Glossary

Abstract.....	4
Introduction.....	6
Literature Review.....	11
Methods.....	17
Results.....	21
Discussion.....	28
Tables	
Table 1. Study Participants Socio-Demographics Characteristics.....	21
Table 2. Assessment of Knowledge by CRNAs of Interpreter Use.....	23
Table 3. Point Bi-Serial Correlation Analysis.....	24
Table 4. Assessment of CRNA Attitudes Towards use of Interpreter Services.....	26
Table 5. Evidence Based Table on Health Disparities Related to Limited English Proficiency..	32
Figures	
Figure 1. Conceptual Framework on Reducing Health Disparities Through Cultural Competence.....	41
Figure 2. Communication Model.....	41
Appendices	
Information Sheet.....	Appendix A
Recruitment Email.....	Appendix B
Follow-Up Email.....	Appendix C
Request to the IANA.....	Appendix D
Interpreter Usage Survey.....	Appendix E

Rachel Ferral’s CITI Training Certificate.....Appendix F

Angela Meyer’s CITI Training Certificate.....Appendix G

Young-Me Lee’s CITI Training Certificate.....Appendix H

Committee Signature Form.....Appendix I

DNP Project Proposal Approval Form.....Appendix J

### Abstract

**Background:** Despite evidence of provider misuse of interpreter services and the resultant adverse outcomes that can and have occurred, few studies have assessed or addressed the gaps in knowledge and attitudes of certified registered nurse anesthetists (CRNAs) towards interpreter service usage when providing care for and consenting limited English proficient (LEP) patients.

**Objectives:** The purpose of this descriptive survey study was to identify CRNA knowledge and attitudes toward interpreter service usage for LEP patients to guide the development of a competency educational tool for CRNAs.

**Methods:** A descriptive, online survey research design was used. The Qualtrics online survey platform was used to administer the survey to CRNAs who are members of the Illinois Association of Nurse Anesthetists (IANA) to assess their knowledge and attitudes toward interpreter service use. Descriptive, *t* test and correlational statistics were used to analyze data.

**Results:** A total of 92 CRNAs participated in this study. This study found a statistically significant positive linear relationship between female gender and a higher mean score of knowledge using point bi-serial correlation analysis ( $p = 0.001$ ). Females tended to have greater knowledge regarding interpreter service use than males. All five questions in the knowledge questionnaire had mean scores indicative of knowledge deficit regarding appropriate interpreter service use. The attitudes questionnaire had a mean of 15.28 (SD=3.31), indicating a positive trend in attitudes towards interpreter service use. Many study participants (62%;  $n=57$ ) have not received continuing education on interpreter services at their primary place of practice and most participants (65%;  $n=60$ ) reported either not receiving or not knowing how often continuing education on interpreter services is offered. These responses support a need for the development

of a competency educational tool to be used as a continuing education resource on interpreter service use among CRNAs for improved safety and quality of care of LEP patients.

**Relevance to Clinical Practice:** Improving the knowledge of appropriate interpreter service use among CRNAs can lead to improved quality and safety of patient care and improved health outcomes of those served by these anesthesia providers. Identifying and addressing informational and attitudinal barriers are key to a consistent use of interpreter services.

## **Introduction**

### **Background and Significance of the Problem**

In the United States, the population is becoming increasingly diversified. While the Caucasian population in the United States (U.S.) continues to decline, the Hispanic, Asian, and African American populations continue to increase (Krogstad, 2015). Coupled to a change in demographics, there has been a change in linguistic diversity. Ryan (2011) found that of the 291 million people in the U.S., approximately 60.5 million people spoke a language besides English within their home environment. Of those 60.5 million people, 15.4% were found to not speak English well, and 7% did not speak English at all (Ryan, 2011). Moreover, the U.S. English Foundation (2016) identified 322 languages that are spoken in the U.S., with Spanish being the second most spoken language after English. These statistics highlight the changes that are occurring within the overall U.S. population.

Not only are the changes in cultural and linguistic diversity being reflected in the overall population, but also specifically within the healthcare setting. With the implementation of the Affordable Care Act (ACA), healthcare options have expanded to millions of Americans who were uninsured or underinsured (U.S. Department of Health and Human Services, 2016a). Betancourt and Tan-McGrory (2014) estimate that of the newly insured patients, a large percentage will likely be a minority and less likely to speak English. Thus, this growing diversity emphasizes the need for safe and quality services tailored toward those with limited or non-English speaking capabilities.

Over the last few decades, safe and quality healthcare has become a central focus of healthcare institutions as many governing agencies have made patient safety a requirement for

government funding (Wilson, 2013). Similarly, research has also focused on safe practice measures, such as Corrigan and colleagues' (1999) report, *To Err is Human*. One of the report findings reads as follows:

The Quality of Health Care in America Committee of the Institute of Medicine (IOM) concluded that it is not acceptable for patients to be harmed by the health care system that is supposed to offer healing and comfort--a system that promises, "First, do no harm." More commonly, errors are caused by faulty systems, processes, and conditions that lead people to make mistakes or fail to prevent them (Corrigan, Donaldson, Kohn, McKay, & Pike, 1999, p. 2).

Despite patient safety becoming a greater focus within healthcare organizations, emphasis on LEP patient safety and compliance with interpreter service use is still lacking. This is evidenced by case reports of lawsuits. For example, Quan and Lynch (2011) identified a case in which a 9-year Vietnamese girl died from a reaction to the drug, Reglan. The girl's parents only spoke Vietnamese. Rather than provide the parents with a competent interpreter upon arriving to the emergency room, staff used the patient and her 16-year brother to interpret the medical information. The case identified three factors when determining the cause of death: lack of competent interpreter provided, use of the patient and her brother as interpreters, and the lack of properly translated informed consent. The family was sent home with discharge instructions in English, including side effects of the medication. Ultimately, this situation led to the patient's death (Quan & Lynch, 2011).

Likewise, in the perioperative setting, effective communication is particularly important for obtaining informed consent for surgical procedures. CRNAs play an integral role in the overall informed consent process by reviewing the patient's health history, discussing the plan of



care, and obtaining consent for anesthesia. Clark, Mangram, Ernest, Lebron, and Peralta (2011) state that when obtaining informed consent, both parties must be competent, conscious, and in agreement of their medical care. Childers, Lipsett, and Pawlik (2009) also explain that the purpose of informed consent is “to identify and respect a patient’s best interests by giving each patient the opportunity to decide autonomously what his or her best interests are in light of the planned procedure” (p. 627). They add that part of obtaining informed consent involves giving patients an explanation of risks and benefits (Childers et al., 2009). Furthermore, patients have the right to receive this information through language assistance services if they are of limited English proficiency (Chen, Youdelman, & Brooks, 2007). When professional medical interpreters are used, limited English proficient patients are more likely to understand their diagnosis and plan of care (Patel et al., 2015). Thus, the quality and safety of care is greatly improved.

### **Problem Statement**

According to Ramirez, Engel, and Tang (2008), facilities still employ a variety of interpreter services, such as in-person professional interpreters, videoconferencing interpreter services, and telephone interpreters. Federal laws protect patients’ right to access these language services (Ramirez et al., 2008). Regardless, the lack of standardization or guidelines for how and when these services should be employed has led to misuse among healthcare providers. For example, in one study, researchers found that surgeons used “their own non-English language skills, bilingual staff, and family and friends of patients to obtain informed consent from LEP patients” (Patel et al., 2016, p. 514). Despite evidence of provider misuse of interpreter services and the resultant adverse outcomes that can and have occurred, there are limited studies that

assess the knowledge and attitudes towards interpreter service usage among CRNAs, who are directly involved in obtaining informed consent in the perioperative setting.

### **Purpose of the Project**

The purpose of this descriptive survey study was to identify CRNA knowledge and attitudes toward interpreter service usage for limited English proficient (LEP) patients to guide the development of a competency educational tool. The goal of the educational tool is to increase CRNA knowledge and consistency with appropriate interpreter service usage for improved safety and quality of care of LEP patients.

### **Clinical Questions**

The clinical questions addressed by this research were as follows:

- In what areas does a lack of knowledge by CRNAs exist for how and when to access interpreter services?
- What are CRNA attitudes towards use of interpreter services for limited English proficient patients?

To help determine specific barriers related to knowledge gaps and attitudes of CRNAs that may have influenced lack of utilization of interpreter services, research questions focused on various factors, such as knowledge of interpreter services and when it is appropriate to access these services, perceived linguistic competence of self or others, and other attitudinal barriers toward interpreter service use.

### **Conceptual Framework**

The purpose of this research project was closely tied to a conceptual framework developed by Brach and Fraser in 2000 that can be seen in Figure 1. The model developed by Brach and Fraser (2000), “Reducing health disparities through the implementation of cultural

competency,” outlines actions that can be taken to improve health outcomes for various ethnic and cultural minority groups. This model describes nine different approaches in delivering culturally competent care, which include “interpreter services, recruitment and retention policies, training, coordinating with traditional healers, use of community health workers, culturally competent health promotion, including family/community members, immersion into another culture, and administrative and organizational accommodations” (Brach and Fraser, 2000, p. 181).

For this study, three components of this model, interpreter services, training, administration and organizational accommodations, were used to support the basis for this research and need for a culturally appropriate educational tool. Brach and Fraser (2000) describe the interpreter services component of their model as an important service for improving communication between patient and provider. This study focused on the knowledge gap and attitudes of CRNAs toward interpreter service use that may limit effective communication. Brach and Fraser’s (2000) training component aims to increase cultural awareness of the staff, which can include new procedures as part of an orientation process or part of an in-service training program. Lastly, the administrative and organizational accommodation technique focuses on the importance of linguistic competency beyond the clinical encounter, which includes readily available information written in the patients’ native language. Overall, the aim of this conceptual model was to reduce healthcare disparities by identifying diverse populations, providing institutional cultural competency, delivering appropriate services for these diverse populations, ultimately leading to improved health outcomes for minority groups (Brach & Fraser, 2000). Adaptation of Brach and Fraser’s model and these important components were

used to create a Provider/LEP Communication Model to serve as a basis for this research and can be seen listed as Figure 2.

CRNAs have an important role in screening, diagnosing, and treating patients' health conditions during the preoperative, intraoperative, and postoperative periods. Consequently, CRNAs must have an effective form of communication with all patients to obtain accurate medical information and avoid inappropriate treatments or adverse events. Hence, the primary focus of this research was to use the previously described essential components of Brach and Fraser's model that are lacking in current practice and emphasize their importance through development of a cultural competency educational tool on interpreter service usage for CRNAs. By improving CRNA consistency of use of these services through this additional education, there is greater potential to reduce health disparities and improve patient safety for LEP patients.

### **Literature Review**

Evidence of the need for this research project was obtained by performing a thorough review of prior literature and research studies that have been summarized in Table 5. Topics of interest included healthcare laws, types of existing interpreter services, adverse events, physician barriers to access interpreter services, and patient perspectives. Academic database searches included use of PubMed, ProQuest Nursing and Allied Health Source, Google Scholar, and CINAHL. Words used in the database search included *law, interpreter services, limited English, informed consent, barriers, adverse events, malpractice, language proficiency, language barriers, and language access*. Primarily, recent literature and research was reviewed between the years of 2007-2016. One additional piece of literature was reviewed from the year 1999 because the work described an established fundamental standard of care. As previously

discussed, the increasing diversity and large numbers of limited English proficient individuals in the United States highlight the need for readily available interpreter services within the healthcare setting.

### **Laws**

At present, there are specific laws in place that guarantee LEP patients' rights to language assistance services. Title VI of the Civil Rights Act of 1964 states that any institution receiving federal funding may not withhold federally funded services based on race, color, or national origin, including healthcare services (Joint Commission, 2015). Efforts to reduce disparities in healthcare delivery for LEP patients lead the Joint Commission to require healthcare organizations to provide language interpreters for patients with limited English proficiency (Joint Commission, 2015). In 2000, the U.S. Department of Health and Human Services initiated the National Standards for Culturally and Linguistically Appropriate Services in Health Care, commonly known as the CLAS standards. These standards provided healthcare institutions with a framework to reduce health disparities through cultural and linguistic services (U.S. Department of Health and Human Services, 2016b). Wilson (2013) states that these standards "were designed to ensure that all people entering the healthcare systems received equitable and effective treatment in a culturally and linguistically appropriate manner" (p. 252). The CLAS standards 1-4 included measures to promote organizational governance and leadership in effective policy, practice, and resources aimed toward equitable, understanding and respectful care (U.S. Department of Health and Human Services, 2016b). CLAS standards 5-8 focused on communication and language assistance, which includes providing verbal and/or written language assistance for LEP patients from competent interpreters (U.S. Department of Health and Human Services, 2016b). Presenting information in a linguistically appropriate manner is an

essential component of proper informed consent and can ultimately reduce barriers in providing safe and effective care.

### **Existing Interpreter Services**

Although there are laws protecting patients' right to interpreter services, evidence in the literature review suggests that hospitals and medical centers are each providing a different set of interpreter services to LEP patients without guidelines for their use. One study conducted at Massachusetts General Hospital discussed the use of medically trained interpreters versus ad-hoc interpreters, such as family members (West, Bittner & Ortiz, 2014). Tschurtz and colleagues (2011) conducted a similar study with 14 hospitals in Florida. They reported that interpreter services were varied and included telephone interpreters, hospital bilingual staff, interpreters hired by the hospitals, volunteer interpreters that are not paid employees of the hospitals, and remote video interpreters (Tschurtz et al., 2011). Diamond and colleagues (2010) added that few healthcare organizations are providing adequate linguistic services. Another study substantiated that claim by finding that surgeons were even choosing to use their own limited foreign language skills to obtain informed consent when professional interpreters were not readily available (Patel et al., 2016). The literature shows that some hospitals are using trained professionals, whereas other hospitals are using non-trained interpreters. Tschurtz and colleagues (2011) explained that incongruences were found "between the language tools, services, and resources hospitals provide and those staff use" (p. 403). The improper use or lack of use of interpreter services combined with a variety of interpreter service options leaves opportunities for errors in provisions of services.

### **Adverse Events**

When appropriate interpreter services are not used, there can be detrimental consequences. Tschurtz and colleagues (2011) expounded that relying on family or bilingual staff members that are not professionally trained can lead to miscommunication and medical errors. The literature review found evidence of several adverse events occurring among limited English proficient patients. Specifically, Divi, Koss, Schmaltz, and Loeb (2007) found that a greater proportion of limited English proficient patients experienced higher levels of harm, such as severe temporary or permanent injury and/or death. They also remarked that “LEP patients experienced a statistically significant greater proportion of adverse events that were attributable to communication failure (52.4%) than did English speaking patients (35.9%)” (Divi et al., 2007, p. 62). Furthermore, patients with limited English proficiency were found to have longer lengths of hospital stays as compared with English proficient patients, and those differences were significant when a professional interpreter was not used (Lindholm, Hargraves, Ferguson, & Reed, 2012).

Another study by Quan and Lynch (2011) analyzed malpractice claims from a malpractice carrier and found that competent professional interpreters were not used in 32 out of 35 malpractice claim cases. In addition, numerous cases resulted in permanent harm or even death due to not providing the patients with appropriate language services. For example, one patient died of an allergic reaction to a drug because a nursing assistant was used as an interpreter and communicated to the physician that the patient told her that he did not have any drug allergies. In another case, a physician used a 17-year old Taiwanese patient as the interpreter for her parents even though the child was ill and later died of a brain abscess (Quan & Lynch, 2011).

Several consequences occur when appropriate interpreters are not utilized. Wilson (2013) mentioned that quality and safety of care decreases, misdiagnosis occurs, tests can be ordered unnecessarily, and patients can be noncompliant or not follow up with their care because the information was not communicated in the appropriate language. Regardless of the type of interpreter services that is provided, Ramirez and colleagues (2011) explain that communication, patient satisfaction, and access to healthcare services can be improved by simply using trained professional interpreters. Given that adverse events are still occurring despite the existence of various interpreter services, focus on improving the safety of this patient care service is still underwhelming.

### **Staff Barriers**

Although the changing demographics of the country prove to be favoring a shift toward the increased need for language services, the literature shows that professional interpreter services in the healthcare setting remain underutilized. The underutilization of interpreter services is a result of the many barriers in place that hinder their use, particularly for the staff directly involved in patient care. Ramirez and colleagues (2008) identified many barriers to utilization of interpreter services in the emergency department setting, including reliance on untrained bilingual staff members or other ad hoc interpreters, time, labor, and cost associated with utilization of services. A survey of 301 primary care physicians in California demonstrated that a large percentage of their weekly patient encounters were with LEP patients, but professional interpreter services were not used. Furthermore, bilingual medical staff or family members were used as interpreters in the care of their patients (Ramirez et al., 2008). Patel and colleagues (2016) state that using ad-hoc interpreters, such as bilingual staff members or the



patient's family members, puts the patient at risk for consenting to procedures and treatments that are not fully understood by the patient.

Staff members also identified time constraints as a barrier in professional interpreter use. In a survey conducted by Patel and colleagues (2016), many respondents cited the use of ad-hoc interpreters or the use of their own non-English language skills if the wait time was greater than 15 minutes. Furthermore, surgeons surveyed consistently reported using their limited non-English skills even when professional interpreter services were available (Patel et al., 2016). The turnover time of services in the perioperative setting continues to be a common theme of underutilization amongst surgeons and OR staff. Although there are federal regulations in place regarding language services for LEP patients, few institutional policies are in place to assign physician accountability for noncompliance (Patel et al., 2016).

Institutional cost barriers to the implementation of interpreter services were identified in the literature review to limit the use of professional interpreter services. According to Wilson (2013), healthcare organizations face a high-cost burden in implementation of interpreter services. The cost of interpreter services ranged from \$30 to \$400 per hour, while the average visit reimbursed by Medicaid ranged from \$30 to \$50 (Wilson, 2013). Furthermore, many private payers do not reimburse for the use of interpreter services (Wilson, 2013). The overall financial burden of implementing interpreter services may limit their availability in settings, such as the emergency department or the surgical department.

### **Patient Perceived Barriers**

Patient perceived barriers was another common theme in the literature review. In a study about patient perceived language barriers conducted by Brooks and colleagues (2016), they determined participants had longer delays in care due to limited interpreter availability. This

leads to misinterpretation of vital information, uncertainty in patient outcomes, and a decline in patient satisfaction due to the communication gap between provider and patient (Wilson, 2013). Another perceived barrier is time. Areas where time constraints occur commonly are the emergency departments or procedural areas, and providers may utilize services, such as ad-hoc interpreters, to lessen the wait time; however, patients describe issues with confidentiality when non-professional interpreter services are used (Brooks et al., 2016). For example, Brooks and colleagues (2016) identified patients, who used family members or acquaintances as interpreters, were less likely to ask questions or adequately describe their symptoms. Overall, patient perceived barriers to language services highlight the issue of the increasing need for professional services in all healthcare settings.

In summary, the literature and studies mentioned previously identify the types of interpreter services available in facilities around the country, adverse events occurring as a result of not using appropriate interpreter services, and the barriers identified by both physicians and patients to access these language services (see Table 5). At present, there is limited research or discussion about knowledge and attitudes towards interpreter service usage by CRNAs. By focusing on this research area that is lacking, knowledge can be gained for creating a culturally competent educational tool that could increase CRNA consistency of use of these services.

## **Methods**

### **Research Design**

A descriptive survey study was conducted. The aim of this research project was to conduct a needs assessment for creation of a competency educational tool to be used by CRNAs. However, the educational tool may be beneficial for all staff in the perioperative period through

educating about consistent interpreter service usage. The research design provided information about the gaps in knowledge and attitudes of CRNAs regarding interpreter service usage. The results guided the development of an educational tool that facilitates increased knowledge and cultural awareness among CRNAs, promotes a more effective communication between these providers and LEP patients, and improves LEP patient safety and quality of care.

### **Sampling**

A purposive sample was attained with a target sample of 100 English-speaking CRNAs (30 males and 70 females) from the Illinois Association of Nurse Anesthetists (IANA). The sample included CRNAs with active membership in the IANA. Participant inclusion criteria included English-speaking CRNAs licensed in the state of Illinois with current active practice. Exclusion criteria included student registered nurse anesthetists (SRNAs), non-English speaking and non-practicing CRNAs.

### **Setting**

Participants were obtained from the IANA through voluntary participation. Upon approval of the Institutional Review Board (IRB) at DePaul University, an electronic survey was sent via email to CRNAs within the IANA membership portfolio requesting their participation. The administrator of IANA sent the email to those members and informed them that participation in the survey was voluntary and that anonymity would be maintained throughout the research.

### **Instruments**

The survey used in this study is attached as Appendix E. It included three sections: (1) demographic information; (2) CRNA knowledge of appropriate use of available interpreter services and attitudes toward utilization of these services; and (3) continuing education needs for

interpreter service usage. Sociodemographic questions focus on age, gender, ethnicity, primary practice setting, hours worked per week, and years of experience as anesthesia providers.

The original survey created by Jackson (2011), was modified to be more applicable for this project. All modifications were reviewed and approved by three nursing faculty members (1 with PhD, 2 with DNP degrees) for content validity and its clarity and appropriateness. The original survey evaluated nursing students' knowledge and attitudes towards pain and reported acceptable internal consistency for reliability with a Cronbach's alpha of 0.701 (Jackson, 2011). This survey was modified to assess the knowledge of and attitudes toward interpreter services so that the clinical questions of this research study could be answered and an educational tool could be developed regarding appropriate interpreter service usage for LEP patients. Knowledge of CRNAs was assessed through five multiple-choice questions with responses graded upon the percentage of correctly answered questions. Lower percentages demonstrate the need for increased education about federal laws mandating the use of interpreter services and the available interpreter services in the workplace. Attitudes were assessed using a 4-point Likert-type scale with seven statements followed by four choices: *1=strongly disagree*, *2=disagree*, *3=agree*, and *4=strongly agree*. Lower scores indicate that more education is needed for interpreter service use. The continuing education needs section included three questions, with one open-ended question aimed at determining the current continuing education needs and practices of CRNAs on interpreter service use. Last, the Cronbach's alpha for reliability was found to be 0.71 in this present study, which is an acceptable value for adequate reliability.

### **Data Collection Procedure**

Upon IRB approval, the subjects for this research study were recruited via email that was obtained by the administrator of the IANA organization. The administrator of the IANA

distributed the survey via email that contained a qualtrics.com link for the members of the IANA to access the survey. An explanation of this research study was provided to participants, which explained that the study contained no risks to participants, and that participation in the survey was voluntary. Instructions were provided on how to appropriately answer the survey questions. Following survey completion, the primary researchers of this study collected the data for analysis. Data collection ended after six weeks from the initial recruitment email date was reached. No IP addresses were collected to ensure privacy of participants. Data that was collected was stored in password-protected computers owned by the researchers with access permitted solely to the researchers.

### **Ethical Consideration**

The DePaul University IRB reviewed the study prior to data collection. The surveys were sent anonymously by utilization of Qualtrics through DePaul University. Participation was voluntary and assumed consent upon completion and submission of the survey as outlined in the instruction section provided with the survey. The information sheet included information regarding purpose of study, information about the survey questions, and researcher information. The researchers also successfully completed the collaborative institutional training initiative (CITI) on human subject protection.

### **Risks and Benefits**

No risks were identified in association with this study design. The questionnaire was sent anonymously with no tracking or identification information. The benefits associated with this study included improvement in the knowledge and attitudes that nurse anesthesia providers have towards LEP patients and interpreter service usage. This change will be reflected in improved LEP patient safety and quality care.

## Data Analysis

The sociodemographic characteristics of the study sample were described using descriptive statistics. Survey data were summarized using frequencies, means, percentages, and standard deviations. Descriptive, *t* test and correlational statistics were used to analyze data using the International Business Machines (IBM) SPSS version 23 (IBM, 2016).

## Results

### Description of Sample

A total of 92 out of the 1200 IANA members (7.9% online survey response rate) responded to the online survey. Most participants to this research survey were female ( $n=61$ , 66.3%) and White/Caucasian ( $n=82$ , 89.1%). In addition, more than a quarter of the 92 participants had been practicing anesthesia as a CRNA for 21 or more years ( $n=33$ , 35.9%) and predominantly worked in an urban practice setting ( $n=36$ , 39.1%). Less than 25% of participants worked in academic/teaching hospitals ( $n=21$ , 22.8%), and almost half of the participants were 50 years and older ( $n=41$ , 45.1%) as seen in Table 1.

**Table 1. Study Participants Socio-Demographics Characteristics**

Variable	Frequency	Number (N)	Percent (%)
Gender	Female	61	66.3
	Male	31	33.7
	Total	92	100
Ethnicity/Race	White/Caucasian	82	89.1
	Black, African, or		
	African American	5	5.4
	Asian or Pacific Islander	3	3.3
	Hispanic, Latino or Spanish	2	2.2
	Total	92	100

Years Practicing as a CRNA	2 years of less as a CRNA	17	18.5
	3-10 years as a CRNA	22	23.9
	11-20 years as a CRNA	20	21.7
	21 or more years as a CRNA	33	35.9
	Total	92	100
Practice Setting	Urban	36	39.1
	Rural	15	16.3
	Academic/Teaching Hospital	21	22.8
	Non-Academic/Non-Teaching Hospital	10	10.9
	Ambulatory Surgical Care, Office, Other Setting	10	10.9
	Total	92	100
Age	20-39 years of age	25	27.5
	40-49 years of age	25	27.5
	50 years or older	41	45.0
	Total	91	100

### Assessment of Knowledge by CRNAs of Interpreter Use

The first clinical question of this research aimed to assess the areas where CRNA knowledge was lacking with regards to interpreter service use. The first knowledge question asked participants to choose which law guarantees LEP patients the legal rights to interpreter services. Of the 92 respondents, 67.4% ( $n=62$ ) incorrectly answered the question. The second knowledge question asked respondents to identify when it is appropriate to use a friend or family member as an interpreter. Of the 92 respondents, 62% ( $n=57$ ) answered the question incorrectly. The third knowledge question asked participants to identify who is appropriate to use as an interpreter for an LEP patient if he/she declines a professional interpreter and requests an alternative individual. Of the 92 respondents, 92.4% ( $n=85$ ) answered the question incorrectly. The fourth knowledge question asked participants to identify which situation would not require

an interpreter. Of the 92 respondents, 39% ( $n=37$ ) answered the question incorrectly. The final knowledge question asked participants to identify which statement regarding LEP patients compared to English proficient patients was an incorrect statement. Of the 92 respondents, 58% ( $n=53$ ) answered the question incorrectly. Except for one question, approximately 60% or more of the study participants selected incorrect answers. Approximately 92% of the participants answered question 3 incorrectly. Thus, the findings revealed that the participants had a significant lack of knowledge in interpreter service use (see Table 2).

**Table 2. Assessment of Knowledge by CRNAs of Interpreter Use**

Variables ( $N=92$ )	Correct % (N)	Incorrect % (N)	Mean*	Standard Deviation
Which of the following guarantees limited English proficient (LEP) patients' legal rights to interpreter services?	32.6% ( $n=30$ )	67.4% ( $n=62$ )	0.33	0.47
When is it appropriate to use a friend or family member as an interpreter for an LEP patient?	38% ( $n=35$ )	62% ( $n=57$ )	0.38	0.49
Who can be used as an interpreter for an LEP patient if he/she declines a professional interpreter and requests an alternative individual?	7.6% ( $n=7$ )	92.4% ( $n=85$ )	0.08	0.27
All of the following situations require an interpreter for an LEP patient <u>EXCEPT...</u>	61% ( $n=55$ )	39% ( $n=37$ )	0.06	0.49



All of the following statements are true regarding LEP patients compared to English proficient patients <u>EXCEPT...</u>	42% ( <i>n</i> =39)	58% ( <i>n</i> =53)	0.54	0.50
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\*Correct answers are coded as number 1, and incorrect are coded as number 0.

### Correlation between Demographics and Knowledge

Point bi-serial correlational analysis was used to determine a relationship between descriptive and a knowledge scale. A significant linear relationship was only found between female gender and a high mean score on knowledge ( $p = 0.001$ ) as seen in Table 3. This finding indicated that females tended to have greater knowledge regarding interpreter service use than males.

**Table 3. Point Bi-Serial Correlation Analysis**

Mean Score Knowledge Scale on Culturally and Linguistically Competent Use of Interpreter		Gender
Mean Score Knowledge Scale on Culturally and Linguistically Competent Use of Interpreter	Point Bi-serial Correlation	1
	Sig. (2-tailed)	.376
	N	.001**
Gender	Point Bi-serial Correlation	75
	Sig. (2-tailed)	75
	N	.001**
		75
		92

\*\*Correlation is significant at  $p < 0.01$  level (2-tailed).

### Assessment of CRNA Attitudes Towards use of Interpreter Services for LEP Patients

The second clinical question for this research study aimed to assess the attitudes of CRNAs regarding the use of interpreter services. Survey questions were formatted in statements,

and respondents were asked to answer questions in a 4-point Likert scale whether they (1) *strongly disagreed*, (2) *disagreed*, (3) *agreed*, or (4) *strongly agreed* with each statement. Sixty-seven percent ( $n=62$ ) of respondents either agreed or strongly agreed that they do not receive sufficient cultural competency training with information about interpreter service usage, but 57% ( $n=52$ ) of respondents reported that they know how to access a professional interpreter when necessary. These responses indicate that although many respondents reported that they do not receive sufficient training, they feel that they have the knowledge needed to access a professional interpreter. Fifty-seven percent ( $n=53$ ) of respondents either agreed or strongly agreed that it is acceptable to rely on their own foreign language skills to interpret for an LEP patient, but 61% ( $n=56$ ) of respondents disagreed or strongly disagreed with the statement that there is no difference between using a professional trained interpreter or a fluent staff member. These responses indicate that although they do recognize a difference between a professional interpreter and lay interpreter's ability to interpret for an LEP patient, the majority still feel it is acceptable to rely on their own foreign language skills.

More than half of the participants (60%;  $n=55$ ) disagreed or strongly disagreed with the statement that it is acceptable to rely on their own limited foreign language skills to interpret for an LEP patient if time constraints exist, and 65% ( $n=60$ ) of participants disagreed or strongly disagreed with the statement that they prefer to use family members or medical personnel to interpret for LEP patients because it is more convenient. Furthermore, 67% ( $n=62$ ) of respondents disagreed or strongly disagreed with the statement of preferring to use family members or medical personnel to interpret for LEP patients because of dissatisfaction with interpreter services at their primary place of practice. These responses indicate that although the majority responded to a previous statement that it is acceptable to rely on their own foreign

language skills to interpret for an LEP patient, they did not feel that it was appropriate to do so in circumstances that involve time constraints, convenience, or dissatisfaction with interpreter services at their primary place of practice.

CRNA mean score for attitudes towards interpreter services was 15.28 (SD = 3.31) as reported in Table 4. An average mean of greater than 15 indicates a positive trend in attitudes towards interpreter service use.

**Table 4. Assessment of CRNA Attitudes Towards use of Interpreter Services**

Variables (N=92)	Disagreed/Strongly	Agreed/Strongly
	Disagreed	Agreed
	% (N)	% (N)
I do NOT receive sufficient cultural competency training that includes information about interpreter service usage at my primary place of practice.	33% (n=30)	67% (n=62)
I prefer to use family members or medical personnel to interpret for LEP patients because it is more convenient.	65% (n=60)	35% (n=32)
It is appropriate to rely on my own foreign language skills to interpret for an LEP patient if I feel I am competent.	43% (n=39)	57% (n=53)
There is no difference between using a professionally trained interpreter and a fluent speaking family member or fluent hospital staff member to interpreter for an LEP patient.	61% (n=56)	39% (n=36)

I do NOT know how to access a professional interpreter when necessary.	57% (n=52)	43% (n=40)
If time constraints exist, it is appropriate for me to rely on my own limited foreign language skills to interpret for an LEP patient.	60% (n=55)	40% (n=45)
I prefer to use family members or medical personnel to interpret for LEP patients because I am dissatisfied with interpreter service availability at my primary place of practice.	67% (n=62)	33% (n=30)
* Average Mean	15.28	
Average Standard Deviation	3.31	

\*Note: Reverse coding was applied for data analysis; 4 = *Strongly Disagree*, 3 = *Disagree*, 2 = *Agree*, and 1 = *Strongly Agree*. An average *mean* score of greater than 15 indicates overall positive attitudes.

### Further Questions on Continuing Education for Interpreter Services Use

To further assess the essential components necessary in an educational tool for interpreter use, participants were asked three questions regarding their current continuing education. The first question asked if the participants receive continuing education on interpreter service usage at their primary place of practice. Of the 92 respondents, 62% (*n*=57) responded that they did not receive continuing education regarding interpreter service usage at their primary place of practice. The second question asked participants to select the frequency with which they receive continuing education on interpreter service use. Of the 92 respondents, 65% (*n*=60) responded

that they either never received continuing education or they don't know how often it is given.

The final question was an open-ended question asking participants what they felt were the most essential component(s) needed for continuing education on interpreter service use. The most commonly reported response was the need to be informed about how to access the interpreter services.

### **Discussion**

The conceptual framework that our research modeled was developed by Brach and Fraser (2000) and titled "Reducing health disparities through the implementation of cultural competency." This model discussed the importance of identifying linguistically, ethnically, and culturally diverse populations and suggested that culturally competent services, such as interpreter services and education/training, be provided. By providing culturally competent care to minority groups, a reduction in health disparities in these groups could be achieved (Brach & Fraser, 2000). This framework was transformed into a suggested Provider/LEP Communication Model seen in Figure 2 that suggested education and training specifically on interpreter service use could increase compliance with interpreter service use, improve communication, and improve safety for LEP patients. Therefore, our research questions focused on assessing CRNA knowledge and attitudes toward interpreter service use to evaluate if improving these deficient areas could reduce adverse health outcomes and improve health services provided to minority populations.

The results of this study found that CRNAs are significantly lacking in knowledge in all the areas that were assessed. Most CRNAs surveyed could not accurately identify the laws that guarantee LEP patients the legal rights to interpreter services, who can be used as an interpreter,

what situations require an interpreter, when it is appropriate to use a professional versus a non-professional interpreter, nor the impact that the lack of these services have on health disparities for LEP patients. When assessing the attitudes of CRNAs toward interpreter services, five out of the seven questions were answered positively, suggesting that there was not a need for education in this area. The two attitude questions that suggested a need for more education were that respondents answered that they did not receive sufficient cultural competency training and that they believed it was appropriate to rely on their own foreign language skills to interpret if they felt competent. Many attitudes towards interpreter service questions were positive responses, suggesting that CRNAs might be open to learning more about appropriate interpreter service usage. If the areas of knowledge that are lacking are addressed, then there may be improved compliance with interpreter service use in the future. The third section of the research survey was to determine a need for continuing education. The results of the survey indicate that many respondents do not receive continuing education on interpreter services and that most people want more information on how to access these services in their primary places of practice. These responses support a need for continuing education on interpreter service use for CRNAs.

As part of an orientation process and continuing education, we recommend that facilities that employ anesthesia providers, such as CRNAs, include education on certain components to ensure that these providers are knowledgeable and can provide safe and competent care for LEP patients. The following five components should be included in a cultural competency tool for CRNAs on interpreter service use for LEP patients: (1) what the law states regarding provisions of interpreter services to LEP patients, (2) who can and cannot be used as an interpreter, (3) what patient care situations require an interpreter, (4) the adverse events that can occur for LEP

patients that are not provided these services appropriately, and (5) how to access these services when they are needed.

### **Limitations**

A limitation to this study was a Kuder Richardson 20 score of 0.051 for the knowledge section, which could be the result of a limited number of knowledge questions asked in the survey leading to inadequate reliability of the questionnaire. In addition, student registered nurse anesthetists and anesthesiologists were also not included in this study and comprise a large portion of anesthesia providers involved in the anesthesia consent process. Thus, this limits the generalization of finding to only CRNAs. The study findings should be interpreted with caution given that the attitudes of participants were self-reported with inherent problems, such as participant dishonesty, a lack of introspective ability, and/or response bias.

### **Nursing Implications**

Prior to administering anesthesia, an anesthesia provider must obtain consent. As reported by the American Association of Nurse Anesthetists (2017), more than 50,000 CRNAs administer more than 43 million anesthetics every year. As a result, CRNAs have a very large impact on the consent process for millions of patients, and can also greatly impact the health outcomes of those individuals. In the literature review, many examples were provided of LEP patients that were impacted negatively due to an inappropriate consent process. These poor health outcomes combined with the results of this study suggest there is substantial need for improvement in this area of patient care. By improving the knowledge of interpreter services among CRNAs, there is a possibility of improving the health outcomes of those served by these anesthesia providers.

### **Directions for Future Research**

Future research should focus on including different types of anesthesia providers, those from other geographic locations, and a larger sample to substantiate this study's findings. From this study's results and the five components we identified that should be part of a cultural competency educational tool for CRNAs on interpreter service usage, future researchers could develop a pilot training program on this topic and evaluate that program for its effectiveness.

### **Conclusions**

This study found that there is significant lack of knowledge on appropriate use of interpreters for LEP patients among CRNAs. The CRNAs attitudes toward interpreter use are positive, but some attitudinal barriers need to be addressed. The results of this study suggest a great need for the development of a competency educational tool to increase CRNA knowledge and consistency with appropriate interpreter service usage for improved safety and quality of care for LEP patients. An educational tool on interpreter service use should be developed based on the information needs of CRNAs gained from this study and should be included in every orientation and continuing educational program for CRNAs. Other health care providers including nurses, student registered nurse anesthetists, and anesthesiologists could also potentially benefit from this educational tool.



**Table 5. Evidence Based Table on Health Disparities Related to Limited English****Proficiency**

Author & Year of Publication	Study Design	Data Collection	Analysis	Conclusion
Betancourt & Tan-McGrory (2014)	Descriptive design with literature review to determine if LEP patients are placed in higher risk situations.	Commentary.	Application of existing guide to identify high-risk situations.	Identification of existing guide to monitor, prevent, report and better identify medical errors in patients with limited English proficiency.
Brach, C. & Fraser, I. (2000)	Descriptive			Identification of health disparities between majority and minority populations through the use of a culturally competent conceptual framework.
Brooks, Stifani, Batlle, Nunez, Erlich, & Diaz (2016)	Descriptive. Process analysis through focus group interviews.	Focus groups w/audio transcripts transcribed to develop a codebook.	TAM analyzer used to code transcripts. Themes were created based on codes.	Three themes emerged: 1. Importance of professional interpreters. 2. Barriers to interpretation showed limited availability or absence of interpreters in operative or procedural areas. 3. Perception that poor care resulted when interpreters were used.
Chen, Youdelman,	Descriptive.	Online databases for	Examination of existing	Four fundamental mechanisms for

& Brooks (2007)		governmental policy initiatives addressing language barriers.	legislation regarding language rights.	language services across institutions were found to be needed: 1. A funding mechanism to lessen variability in services. 2. Investment in expansion of professional workforce of interpreters. 3. Healthcare providers must understand the effects and benefits of using trained interpreters. 4. LEP patient need to be aware of their legal rights.
Childers, Lipsett, & Pawlik (2009)	Descriptive. To provide a perspective on the ethical and pragmatic applications of informed consent of value to the surgeon.		Examination of models of informed consent: professional, reasonable, subjective, and balanced models were examined.	Five areas are essential in obtaining informed consent: Informing the patient, the consent process, patient refusal, diminished capacity, and cultural and familial issues.
Clark, S., Mangram, A., Ernest, D., Lebron, R. & Peralta, L. (2011)	Randomized prospective study	Patients observed at a community hospital in Dallas, TX, who presented for an elective laparoscopic cholecystecto-		The patients who were not born in the United States and who did not speak English showed a decreased understanding of the surgical

		my and placed into two groups, with one not receiving information in their native language.		procedure as well as the severity of the complications.
Corrigan, Donaldson, Kohn, McKay, & Pike (1999)	Descriptive.	Two case studies were reviewed that identify types of medical errors.	Development of guidelines for safe practice.	Strategies recommended for improvement to reduce medical errors in patient care and promote a safe culture of practice.
Diamond, Wilson-Stronks, & Jacobs (2010)	Cross-sectional survey that aims to assess how U.S. hospitals are meeting federal regulations for CLAS standards.	A total of 239 hospitals were sampled using two different sampling methods: a stratified national sample and a judgment sample.	Standard frequency analyses were used to describe the study sample and their responses. Bivariate analyses using Chi-square or Fisher exact test were used to assess differences between respondents.	This study documents that many of the hospitals do not provide language services consistent with federal law standards.
Divi, Koss, Schmaltz, & Loeb (2007)	Relational study that aims to identify a relationship between adverse events and LEP versus English-speaking patients.	Data collected between 2/1/2005 and 8/31/2005 in 12 hospitals accredited by JCAHO. Hospitals were provided with simple protocol for random selection of	PC-SAS was used for all analysis. Descriptive statistics were calculated for the PSET categories. Mantel-Haenszel odds ratio was used to test associations	A greater proportion of LEP patient adverse events resulted in a higher level of harm compared with English-speaking patients. System factors were found to play a statistically

		20 reported adverse events. Events were coded using PSET.	between PSET categories. $P < 0.05$ with a two-tailed test.	significantly greater role in the occurrence of adverse events for LEP patients than English-speaking patients.
Hunt & Isgur (2013)	Descriptive.	Data collected from various institutions reimbursed through Medicaid and reported to the Health Research Institute.		Challenges and opportunities identified for the health industry to prepare for the demographic changes of the 30 million newly insured as a result of the roll out of the Affordable Care Act.
Jackson (2011)	Descriptive.	Forty graduate nursing students were surveyed regarding their knowledge and attitudes towards pain. Survey was a modification of the Nurses Attitude Survey and the Pain Management and Principles Assessment Test.	Data was analyzed using means, standard deviations, frequencies, and percentages.	The evidence collected from this study supports the need for pain management education and addressing provider attitudes towards pain management.
Joint Commission (2015)	Descriptive.	Data collected from mandatory reporting agencies to develop case study reports.		Identification of safety risks associated with LEP patients that extend to organizational risks.

Krogstad (2015)	Descriptive. Aims to describe the changing demographics within the country based on U.S. Census Bureau information from 2000-2013.	Data collected from Pew Research Institute analysis and U.S. Census Bureau between 2000-2013.		Describes the changing demographics within the United States including the breakdown of demographic shifts per county.
Lindholm, Hargraves, Ferguson, & Reed (2012)	Relational.	Data collected by retrospective analysis of length of stay and 30-day readmission rates among patients admitted to a university hospital between 5/2004 and 4/2007.	Two variables (using interpreters versus not using interpreters) were used in multivariable regression models to control for severity and age effects on length of stay. Chi-Square test used, $p < 0.0001$ .	LEP patients who did not receive professional interpretation had a longer length of stay and higher readmission rates than those who received interpreter services.
Patel, Wakeam, Genoff, Mujawar, Ashley, & Diamond (2015)	Descriptive and relational.	Data collected by open-ended surveys of surgeons from 10/2013 and 01/2014 from all surgical specialties at an academic medical center in Boston, MA. Surgeons were asked to rate their	Bivariate comparisons described the relationship between LEP patients and social demographic variables collected using the Chi-Square, Fisher exact and t-test. $P < 0.05$ and CI 95%.	Surgeons not fluent in non English-speaking languages reported that they often used their limited foreign language skills to obtain informed consent when professional interpreters were not available.

		skills and fluency in non English-speaking languages. In addition, surgeons were asked to rate how they would obtain informed consent from a LEP patient.		
Quan & Lynch (2011)	Descriptive. Purpose of the study was to identify malpractice claims, in which language barriers may have had an impact on the patient's health outcome.	Researchers reviewed all of the closed claims from a malpractice insurance company (Carrier) from 1/2005 through 5/2009 that involved any spoken or written language other than English.		Identified many costs associated with studied claims that could have been avoided with effective communication and suggested that the investment of language services were far less than the costs of not providing these services.
Ramirez, Engel, & Tang (2008)	Descriptive design with literature review to describe differences among LEP patients who received professional interpreters versus those who did not and compare their length of stay and 30-day	PubMed, OVID from 1966-2006, Google and the Library of Congress using key terms emergency department, language barriers, translational services, interpreter, cultural	Multi-variable regression models to control patient characteristics, such as age, illness severity, language, and gender.	Underutilization of professional interpreter services was identified. Furthermore, LEP patients expressed greater dissatisfaction with their medical encounters than English-speaking patients.

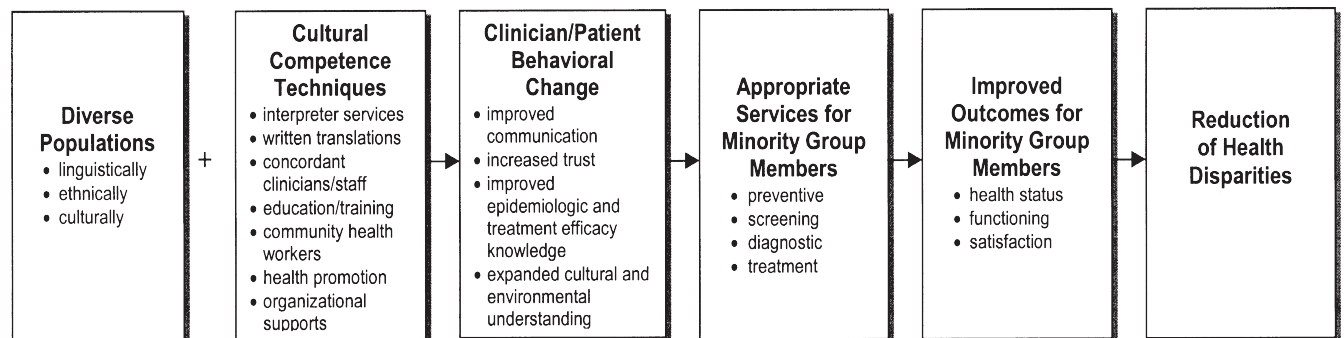
	readmission rates.	competency, utilization, efficacy and medical Spanish.		
Ryan (2011)	Descriptive. Purpose of this report was to identify the proportion of the U.S. population that may need help in understanding English.	Data collected from questions included in the American Community Survey (ACS), which is the primary source of language data for the 2011 survey reports.		This report provides illustrative evidence of the continuing and increasing role of non-English languages as part of the nation's linguistic diversity.
Tschurtz, Koss, Kupka, Williams, & Mixon (2011)	Descriptive. The aim of this study was to assess the types of language tools available and used in Florida hospitals across three counties.	Two questionnaires were used to collect data. One questionnaire was given to administration to assess the language services offered. The second questionnaire was given to staff to determine their awareness of the language services available to use.	Descriptive.	The hospitals surveyed demonstrated adequate availability of variable language tools. On the other hand, the staff surveyed were either unaware of the tools available or did not know how to use them.
U.S. Department of Health and Human	Descriptive. Aim was to describe and explain each			Explanation in detail of each section of the

Services (2016a)	section of the Affordable Care Act.			Affordable Care Act.
U.S. Department of Health and Human Services (2016b)	Descriptive. Aim was to address the disparities in healthcare delivery for LEP patients.		Editorial of mandated guidelines for healthcare institutions by implementing CLAS standards.	Development of CLAS standards to reduce the disparities in healthcare for LEP patients.
U.S. English Foundation (2016)	Descriptive. Aim of this report was to illustrate the linguistic diversity in America.	Language data was collected from the U.S. Census Bureau in 2000 through a long form where residents were asked to indicate whether each member of the household, age five and older, spoke English at home. If English was not specified as the language spoken at home, respondents were asked to list the language used at home.		The data identified the linguistic diversity within America.
West, Bittner, & Ortiz (2014)	Randomized control, non-blinded pilot study.	Study conducted from 07/2010 to 06/2011 at Massachusetts	Continuous variables were compared using the two-sample t-test	There was significant reduction in anxiety in patients who

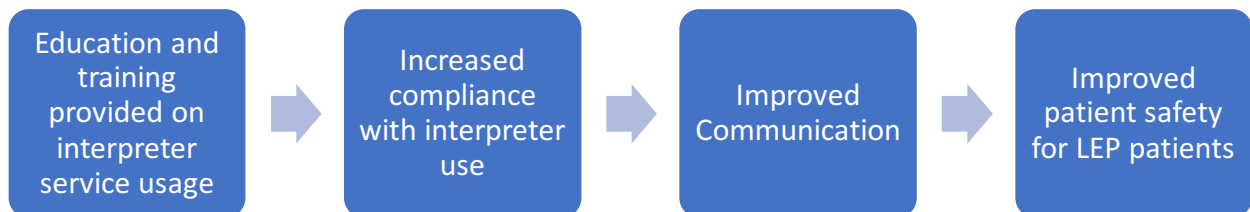


		General Hospital. Twenty Spanish-speaking patients scheduled for procedures were given a pre and post-test of information describing their surgery. Medically trained interpreters were used to obtain consent, and information was presented in the patients' native language.	or Wilcoxon rank sum test. Chi-square was used for categorical variables. $P < 0.05$ .	were given information via video in their native language.
Wilson (2013)	Descriptive.	Case studies were analyzed, while comparing current legislations in various states for a changing demographic.		Patient safety and healthcare quality was identified to still be a problem, particularly with LEP patients. Barriers to providing HHS CLAS standards were also identified.

**Figure 1. Conceptual Framework on Reducing Health Disparities Through Cultural Competence**



**Figure 2. Communication Model**



## Appendix A

### Information Sheet for Participation in Research Study

A Needs Assessment for Development of an Interpreter Services Educational Tool in Anesthesia

Researchers: Rachel Ferral, RN, BSN, Graduate Student and Angela Meyer, RN, BSN, Graduate Student

Institution: DePaul University, Chicago, IL, USA

Faculty Advisor: Young-Me Lee, PhD, RN

Research Team: Bernadette Roche, CRNA, EdD

Collaborators: NorthShore University HealthSystem School of Nurse Anesthesia, Evanston, IL and Illinois Association of Nurse Anesthetists, Springfield, IL

This survey will take approximately 15 minutes to complete. You must be currently licensed in the state of Illinois with current active practice to meet inclusion criteria for this study.

The survey questions will include sociodemographic questions, such as your age, gender, ethnicity, and years of experience as a CRNA. Other survey questions will focus on knowledge of interpreter services and attitudes towards use of interpreter services. Your responses will be completely anonymous with no IP addresses collected. Data collected on behalf of this research will be kept on a password protected computer and will be deleted after completion of the Doctor of Nursing Practice program. You have the right to withdraw and exit from the survey at any point in time if you decide not to participate, and you have the right to skip any question you do not wish to answer. Submission of the completed survey serves as the acceptance of your participation in this study and agreement with the terms mentioned above.

Questions regarding your rights as a research subject can be directed to the Director of Research Compliance in the Office of Research Services at DePaul University. You may contact Susan Loess-Perez at [sloesspe@depaul.edu](mailto:sloesspe@depaul.edu) or 312-362-7593.

Thank you for your participation in this research study.

Rachel Ferral, RN, BSN and Angela Meyer, RN, BSN

## Appendix B

### Recruitment Email

Dear Certified Registered Nurse Anesthetist,

Our names are Rachel Ferral and Angela Meyer, and we are conducting graduate research at DePaul University as part of our Doctor of Nursing Practice program. This research is being conducted to better understand interpreter service usage among CRNAs. The purpose of our research study is to

- 1) determine CRNA knowledge of when and how to access available interpreter services within their facilities
- 2) assess CRNA attitudes toward use of these services

The goal of this research is to use the information obtained from this survey for the development of an educational tool for CRNAs within Illinois with the goal of improving compliance with regulatory standards, patient safety, and quality of care.

If you are currently in active practice, we are requesting your participation in our study to better understand your knowledge of and attitudes towards use of interpreter services. Your participation in this study is completely voluntary and should only take approximately 15 minutes of your time. If you chose to participate, click on the link to the secure website ([www.depaul.qualtrics.com](http://www.depaul.qualtrics.com)) where you can begin to complete the survey.

Your responses will be completely anonymous, and you may withdraw participation at any point in time without any consequence. Participation in this survey will not impact IANA membership in any way. You may also skip any question you do not wish to complete. Completion and submission of the survey serves as your acceptance of your voluntary participation in this study.

Thank you for consideration of your participation in this study.

Sincerely,

Rachel Ferral, RN, BSN  
[rferral@yahoo.com](mailto:rferral@yahoo.com)  
815-419-1081

Angela Meyer, RN, BSN  
[anmeyer@uwalumni.com](mailto:anmeyer@uwalumni.com)  
608-234-8044

## Appendix C

### Follow-Up Email (2 & 4 Weeks)

Dear Certified Registered Nurse Anesthetist,

Our names are Rachel Ferral and Angela Meyer, and we are conducting graduate research at DePaul University as part of our Doctor of Nursing Practice program. You recently received an email inviting to participate in this research by completing an electronic survey. The purpose of our research study is to

- 1) determine CRNA knowledge of when and how to access available interpreter services within their facilities
- 2) assess CRNA attitudes toward use of these services

The goal of this research is to use the information obtained from this survey for the development of an educational tool for CRNAs within Illinois with the goal of improving compliance with regulatory standards, patient safety, and quality of care.

Your participation in this study is completely voluntary and should only take approximately 15 minutes of your time. To participate, click on the link to the secure website ([www.depaul.qualtrics.com](http://www.depaul.qualtrics.com)) where you can begin to complete the survey.

Your responses will be completely anonymous, and you may withdraw participation at any point in time without any consequence. Participation in this survey will not impact IANA membership in any way. You may also skip any question you do not wish to complete. Completion and submission of the survey serves as your acceptance of your voluntary participation in this study.

Thank you for consideration of your participation in this study.

Sincerely,

Rachel Ferral, RN, BSN  
[rferral@yahoo.com](mailto:rferral@yahoo.com)  
815-419-1081

Angela Meyer, RN, BSN  
[anmeyer@uwalumni.com](mailto:anmeyer@uwalumni.com)  
608-234-8044

**Appendix D**

## Request to IANA

Illinois Association of Nurse Anesthetists  
100 East Washington Street  
Springfield, IL 62701

To Whom It May Concern,

Our names are Rachel Ferral and Angela Meyer. We are senior student nurse anesthetists at DePaul University and NorthShore School of Nurse Anesthesia. We are currently working on our doctoral research project, which is focused on interpreter service usage for limited English proficient patients. Our literature review suggests that although the law states that interpreter services must be provided to limited English proficient patients, these services are not being provided or used consistently and have resulted in many adverse events for this patient population. Consequently, we would like to survey only the CRNAs of the IANA to assess knowledge and attitudes toward use of interpreter services for creation of a competency educational tool on appropriate interpreter service usage. SRNAs will not be surveyed as part of this study. Participation in this survey will have no impact on IANA membership and its use is solely for the scope of this research study.

We are requesting your help and ask that you forward our recruitment email to the IANA nurse anesthesia providers to invite them to participate in our survey. The survey will take approximately 15 minutes, and a secure link will be sent from Qualtrics to access the survey. If you have further questions, our contact information is listed below.

Thank you,

Rachel Ferral, RN, BSN  
[rferral@yahoo.com](mailto:rferral@yahoo.com)  
815-419-1081

Angela Meyer, RN, BSN  
[anmeyer@uwalumni.com](mailto:anmeyer@uwalumni.com)  
608-234-8044

## **Appendix E**

### Interpreter Usage Survey

#### **Demographic Information (6 questions)**

1. What is your gender?
  1. Male
  2. Female
  3. Other
2. What is your ethnicity?
  1. White or Caucasian
  2. Black, African, or African American
  3. Asian, or Pacific Islander
  4. Hispanic, Latino, or Spanish Origin
  5. Native American or American Indian
  6. Other
3. What is your age?
  1. 20-29 years old
  2. 30-39 years old
  3. 40-49 years old
  4. 50+ years old
4. What best describes your primary practice setting? (select all that apply)
  1. Urban hospital
  2. Rural hospital
  3. Academic or teaching hospital

4. Nonacademic or nonteaching hospital
  5. Ambulatory surgical center
  6. Other (Please explain \_\_\_\_\_)
5. How long have you been providing anesthesia services?
1. Less than 2 years as a Certified Registered Nurse Anesthetist
  2. 3-10 years as a Certified Registered Nurse Anesthetist
  3. 11-20 years as a Certified Registered Nurse Anesthetist
  4. 20+ years as a Certified Registered Nurse Anesthetist
6. On average, how many hours per week do you spend providing anesthesia services?
1. Less than 24 hours
  2. 24-36 hours
  3. 36+ hours

**Needs Assessment: Knowledge (5 questions)**

1. Which of the following guarantees limited English proficient (LEP) patients' legal rights to interpreter services?
  1. Joint Commission
  2. **Title VI of the Civil Rights Act of 1964**
  3. Affordable Care Act
  4. 14<sup>th</sup> Amendment
  5. None of the above
2. When is it appropriate to use a friend or family member as an interpreter for an LEP patient?
  1. Always



2. **After the patient declines a professional interpreter**
  3. When time constraints exist
  4. Never
3. Who can be used as an interpreter for an LEP patient if he/she declines a professional interpreter and requests an alternative individual? (select all that apply)
  1. **Adult family member**
  2. **Child family member <18 years old**
  3. **Hospital staff member**
  4. **Family friend**
  5. None of the above
4. All of the following situations require an interpreter for an LEP patient **EXCEPT**:
  1. When obtaining consent for anesthesia and/or related procedures
  2. **With all patient care contact**
  3. When informing patient of plan of care
  4. When obtaining patient history
  5. When administering pre-op medications or placing an IV
5. All of the following statements are true regarding LEP patients compared to English proficient patients **EXCEPT**:
  1. LEP patients are more likely to experience higher levels of harm.
  2. LEP patients are more likely to have longer lengths of hospital stays.
  3. LEP patients are more likely to have unnecessary tests ordered and performed.
  4. **LEP patients are more likely to be satisfied with their care when a family member is used as an interpreter.**

**Needs Assessment: Attitudes (7 questions)**

Select the response that best describes your attitudes towards the following statements.

1. I do NOT receive sufficient cultural competency training that includes information about interpreter service usage at my primary place of practice.

1. **Strongly Disagree**      2. Disagree      3. Agree      4. Strongly Agree

2. I do NOT know how to access a professional interpreter when necessary.

1. **Strongly Disagree**      2. Disagree      3. Agree      4. Strongly Agree

3. It is appropriate to rely on my own foreign language skills to interpret for an LEP patient if I feel I am competent.

1. **Strongly Disagree**      2. Disagree      3. Agree      4. Strongly Agree

4. There is no difference between using a professionally trained interpreter and a fluent speaking family member or fluent hospital staff member to interpreter for an LEP patient.

1. **Strongly Disagree**      2. Disagree      3. Agree      4. Strongly Agree

5. If time constraints exist, it is appropriate for me to rely on my own limited foreign language skills to interpret for an LEP patient.

1. **Strongly Disagree**      2. Disagree      3. Agree      4. Strongly Agree

6. I prefer to use family members or medical personnel to interpret for LEP patients because it is more convenient.

1. **Strongly Disagree**      2. Disagree      3. Agree      4. Strongly Agree

7. I prefer to use family members or medical personnel to interpret for LEP patients because I am dissatisfied with interpreter service availability at my primary place of practice.

1. **Strongly Disagree**      2. Disagree      3. Agree      4. Strongly Agree

**Continuing Education Needs for Interpreter Services Use (3 questions)**

1. Did you receive information or an in-service on interpreter service usage at your primary place of anesthesia practice?
  1. Yes
  2. No
2. How often do you receive education on interpreter service usage?
  1. On initial employment
  2. Annually
  3. Never
  4. I don't know
3. What do you feel is the most essential component(s) needed if you were to receive education on interpreter service use? \_\_\_\_\_

## Appendix F

### Rachel Ferral's CITI Training Certificate

#### COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM) COURSEWORK REQUIREMENTS REPORT\*

\* NOTE: Scores on this Requirements Report reflect quiz completions at the time all requirements for the course were met. See list below for details. See separate Transcript Report for more recent quiz scores, including those on optional (supplemental) course elements.

• **Name:** Rachel ferral (ID: 5555052)  
 • **Email:** rferral@yahoo.com  
 • **Institution Affiliation:** DePaul University (ID: 1435)  
 • **Phone:** 8154191081

• **Curriculum Group:** Students  
 • **Course Learner Group:** Students - Class projects  
 • **Stage:** Stage 1 - Basic Course

• **Report ID:** 19535517  
 • **Completion Date:** 05/16/2016  
 • **Expiration Date:** 05/16/2019  
 • **Minimum Passing:** 80  
 • **Reported Score\*:** 85

REQUIRED AND ELECTIVE MODULES ONLY	DATE COMPLETED	SCORE
History and Ethical Principles - SBE (ID: 490)	05/16/16	4/5 (80%)
Defining Research with Human Subjects - SBE (ID: 491)	05/16/16	4/5 (80%)
The Federal Regulations - SBE (ID: 502)	05/16/16	5/5 (100%)
Assessing Risk - SBE (ID: 503)	05/16/16	4/5 (80%)
Informed Consent - SBE (ID: 504)	05/16/16	5/5 (100%)
Privacy and Confidentiality - SBE (ID: 505)	05/16/16	4/5 (80%)
Students in Research (ID: 1321)	05/16/16	4/5 (80%)
Conflicts of Interest in Research Involving Human Subjects (ID: 488)	05/16/16	4/5 (80%)
DePaul University (ID: 12952)	05/16/16	No Quiz

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid Independent Learner.

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## COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)

### COURSEWORK TRANSCRIPT REPORT\*\*

\*\* NOTE: Scores on this Transcript Report reflect the most current quiz completions, including quizzes on optional (supplemental) elements of the course. See list below for details. See separate Requirements Report for the reported scores at the time all requirements for the course were met.

• **Name:** Rachel ferral (ID: 5555052)  
 • **Email:** rferral@yahoo.com  
 • **Institution Affiliation:** DePaul University (ID: 1435)  
 • **Phone:** 8154191081

• **Curriculum Group:** Students  
 • **Course Learner Group:** Students - Class projects  
 • **Stage:** Stage 1 - Basic Course

• **Report ID:** 19535517  
 • **Report Date:** 05/16/2016  
 • **Current Score\*\*:** 81

REQUIRED, ELECTIVE, AND SUPPLEMENTAL MODULES	MOST RECENT	SCORE
History and Ethics of Human Subjects Research (ID: 498)	05/14/16	Quiz Not Taken
Students in Research (ID: 1321)	05/16/16	4/5 (80%)
History and Ethical Principles - SBE (ID: 490)	05/16/16	4/5 (80%)
Defining Research with Human Subjects - SBE (ID: 491)	05/16/16	4/5 (80%)
Belmont Report and CITI Course Introduction (ID: 1127)	05/14/16	1/3 (33%)
The Federal Regulations - SBE (ID: 502)	05/16/16	5/5 (100%)
Assessing Risk - SBE (ID: 503)	05/16/16	4/5 (80%)
Informed Consent - SBE (ID: 504)	05/16/16	5/5 (100%)
Privacy and Confidentiality - SBE (ID: 505)	05/16/16	4/5 (80%)
Conflicts of Interest in Research Involving Human Subjects (ID: 488)	05/16/16	4/5 (80%)
DePaul University (ID: 12952)	05/16/16	No Quiz

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid Independent Learner.

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## Appendix G

### Angela Meyer's CITI training certificate

#### COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM) COURSEWORK REQUIREMENTS REPORT\*

\* NOTE: Scores on this Requirements Report reflect quiz completions at the time all requirements for the course were met. See list below for details. See separate Transcript Report for more recent quiz scores, including those on optional (supplemental) course elements.

• **Name:** Angela Meyer (ID: 4567350)  
 • **Email:** anmeyer@uwalumni.com  
 • **Institution Affiliation:** DePaul University (ID: 1435)  
 • **Phone:** 6082348044

• **Curriculum Group:** Students  
 • **Course Learner Group:** Students - Class projects  
 • **Stage:** Stage 1 - Basic Course

• **Report ID:** 14857948  
 • **Completion Date:** 12/31/2014  
 • **Expiration Date:** 12/30/2017  
 • **Minimum Passing:** 80  
 • **Reported Score\*:** 98

REQUIRED AND ELECTIVE MODULES ONLY	DATE COMPLETED	SCORE
Students in Research	12/31/14	10/10 (100%)
History and Ethical Principles - SBE	12/31/14	5/5 (100%)
Defining Research with Human Subjects - SBE	12/31/14	5/5 (100%)
The Federal Regulations - SBE	12/31/14	5/5 (100%)
Assessing Risk - SBE	12/31/14	5/5 (100%)
Informed Consent - SBE	12/31/14	5/5 (100%)
Privacy and Confidentiality - SBE	12/31/14	5/5 (100%)
Conflicts of Interest in Research Involving Human Subjects	12/31/14	4/5 (80%)
DePaul University	12/31/14	No Quiz

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid Independent Learner.

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Phone: 305-243-7970

Web: <https://www.citiprogram.org>

## COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)

### COURSEWORK TRANSCRIPT REPORT\*\*

\*\* NOTE: Scores on this Transcript Report reflect the most current quiz completions, including quizzes on optional (supplemental) elements of the course. See list below for details. See separate Requirements Report for the reported scores at the time all requirements for the course were met.

• **Name:** Angela Meyer (ID: 4567350)  
 • **Email:** anmeyer@uwalumni.com  
 • **Institution Affiliation:** DePaul University (ID: 1435)  
 • **Phone:** 6082348044

• **Curriculum Group:** Students  
 • **Course Learner Group:** Students - Class projects  
 • **Stage:** Stage 1 - Basic Course

• **Report ID:** 14857948  
 • **Report Date:** 12/31/2014  
 • **Current Score\*\*:** 98

REQUIRED, ELECTIVE, AND SUPPLEMENTAL MODULES	MOST RECENT	SCORE
Students in Research	12/31/14	10/10 (100%)
History and Ethical Principles - SBE	12/31/14	5/5 (100%)
Defining Research with Human Subjects - SBE	12/31/14	5/5 (100%)
The Federal Regulations - SBE	12/31/14	5/5 (100%)
Assessing Risk - SBE	12/31/14	5/5 (100%)
Informed Consent - SBE	12/31/14	5/5 (100%)
Privacy and Confidentiality - SBE	12/31/14	5/5 (100%)
Conflicts of Interest in Research Involving Human Subjects	12/31/14	4/5 (80%)
DePaul University	12/31/14	No Quiz

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid Independent Learner.

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Collaborative Institutional  
 Training Initiative  
 at the University of Miami



## Appendix H

### Young-Me Lee's CITI training certificate

#### COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM) COMPLETION REPORT - PART 1 OF 2 COURSEWORK REQUIREMENTS\*

\* NOTE: Scores on this Requirements Report reflect quiz completions at the time all requirements for the course were met. See list below for details. See separate Transcript Report for more recent quiz scores, including those on optional (supplemental) course elements.

- **Name:** Young-Me Lee (ID: 1729663)
- **Email:** ylee23@depaul.edu
- **Institution Affiliation:** DePaul University (ID: 1435)
- **Phone:** 773-325-4105
  
- **Curriculum Group:** IRB Members & IRB Staff
- **Course Learner Group:** Same as Curriculum Group
- **Stage:** Stage 3 - Refresher Course
  
- **Report ID:** 19218519
- **Completion Date:** 06-Sep-2016
- **Expiration Date:** 06-Sep-2019
- **Minimum Passing:** 80
- **Reported Score\*:** 100

REQUIRED AND ELECTIVE MODULES ONLY	DATE COMPLETED	SCORE
SBE Refresher 2 – Federal Regulations for Protecting Research Subjects (ID: 15040)	06-Sep-2016	1/1 (100%)
SBE Refresher 2 – Defining Research with Human Subjects (ID: 15038)	06-Sep-2016	1/1 (100%)
SBE Refresher 2 – Research with Children (ID: 15043)	06-Sep-2016	1/1 (100%)
SBE Refresher 2 – Research in the Public Schools (ID: 15042)	06-Sep-2016	1/1 (100%)
SBE Refresher 2 – International Research (ID: 15045)	06-Sep-2016	1/1 (100%)
SBE Refresher 2 – Informed Consent (ID: 12620)	06-Sep-2016	1/1 (100%)
SBE Refresher 2 – Privacy and Confidentiality (ID: 12622)	06-Sep-2016	1/1 (100%)
SBE Refresher 2 – Assessing Risk (ID: 12624)	06-Sep-2016	1/1 (100%)
SBE Refresher 2 – Research with Prisoners (ID: 12627)	06-Sep-2016	1/1 (100%)

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid Independent Learner.

Verify at: <https://www.citiprogram.org/verify/74e08f2d0-bdb3-4ee3-bbda-00f0dd1aa552>

**CITI Program**  
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Phone: 888-529-5929  
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**COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)****COMPLETION REPORT - PART 2 OF 2  
COURSEWORK TRANSCRIPT\*\***

\*\* NOTE: Scores on this Transcript Report reflect the most current quiz completions, including quizzes on optional (supplemental) elements of the course. See list below for details. See separate Requirements Report for the reported scores at the time all requirements for the course were met.

• **Name:** Young-Me Lee (ID: 1729663)  
 • **Email:** ylee23@depaul.edu  
 • **Institution Affiliation:** DePaul University (ID: 1435)  
 • **Phone:** 773-325-4105

• **Curriculum Group:** IRB Members & IRB Staff  
 • **Course Learner Group:** Same as Curriculum Group  
 • **Stage:** Stage 3 - Refresher Course

• **Report ID:** 19218519  
 • **Report Date:** 06-Sep-2016  
 • **Current Score\*\*:** 100

REQUIRED, ELECTIVE, AND SUPPLEMENTAL MODULES	MOST RECENT	SCORE
SBE Refresher 2 – Informed Consent (ID: 12620)	06-Sep-2016	1/1 (100%)
SBE Refresher 2 – Privacy and Confidentiality (ID: 12622)	06-Sep-2016	1/1 (100%)
SBE Refresher 2 – Assessing Risk (ID: 12624)	06-Sep-2016	1/1 (100%)
SBE Refresher 2 – Research with Prisoners (ID: 12627)	06-Sep-2016	1/1 (100%)
SBE Refresher 2 – Defining Research with Human Subjects (ID: 15038)	06-Sep-2016	1/1 (100%)
SBE Refresher 2 – Federal Regulations for Protecting Research Subjects (ID: 15040)	06-Sep-2016	1/1 (100%)
SBE Refresher 2 – Research in the Public Schools (ID: 15042)	06-Sep-2016	1/1 (100%)
SBE Refresher 2 – Research with Children (ID: 15043)	06-Sep-2016	1/1 (100%)
SBE Refresher 2 – International Research (ID: 15045)	06-Sep-2016	1/1 (100%)

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid Independent Learner.

Verify at: <https://www.citiprogram.org/verify/74e08f2d0-bdb3-4ee3-bbda-00f0dd1aa552>

Collaborative Institutional Training Initiative (CITI Program)

Email: [support@citiprogram.org](mailto:support@citiprogram.org)

Phone: 888-529-5929

Web: <https://www.citiprogram.org>

**Appendix I****Committee Signature Form**

DePaul University  
School of Nursing  
Doctor of Nursing Practice Program (DNP)  
DNP Project  
Request Form for Appointment of Doctoral Committee

Date 09 / 29 / 2016

Student Name (s): Rachel Ferral and Angie Meyer

DNP Project Topic: Needs Assessment to Develop an Interpreter Services Educational Tool in Anesthesia

Please appoint the following faculty members to the Doctoral committee for the above name student. Each of these faculty members has been contacted by the student (s) and signatures indicate agreement and willingness to serve on this committee. By signing this form, the committee member verifies that no conflict of interest exists.

Young Me Lee  
Name of the DNP Committee Chair

Young Lee 10/03/2016  
Signature Date

Bernadette Roche  
Name of the DNP Committee Member

Bernadette Roche 10/11/16  
Signature Date

\_\_\_\_\_  
Name of the DNP Committee Member

\_\_\_\_\_  
Signature Date

# DNP Project Approval Form

Date \_\_\_\_\_

### References

- American Association of Nurse Anesthetists. (2017). About Us. Retrieved March 15, 2017, from <http://www.aana.com/aboutus/Pages/default.aspx>
- Betancourt, J.R. & Tan-McGrory, A. (2014). Creating a safe, high-quality healthcare system for all: Meeting the needs of limited English proficient population. *Internal Journal of Health Policy and Management*, 2(2), 91-94. doi: 10.15171/ijhpm.2014.21.
- Brach, C. & Fraser, I. (2000). Can cultural competency reduce racial and ethnic health disparities? A review and conceptual model. *Medical Care Research and Review*, 57(1), 181-217.
- Brooks, K., Stifani, B., Batlle, H. R., Nunez, M.A., Erlich, M., & Diaz, J. (2016). Patient perspectives on the need for and barriers to professional medical interpretation. *Rhode Island Medical Journal*, 99(1), 30-33.
- Chen, A. H., Youdelman, M. K., & Brooks, J. (2007). The legal framework for language access in healthcare settings: Title VI and beyond. *Journal of General Internal Medicine*, 22(2), 362-367. doi:10.1007/s11606-007-0366-2.
- Childers, R., Lipsett, P. A., & Pawlik, T. M. (2009). Informed consent and the surgeon. *Journal of the American College of Surgeons*, 208(4), 627-634. doi:10.1016/j.jamcollsurg.2008.12.012.
- Clark, S., Mangram, A., Ernest, D., Lebron, R. & Peralta, L. (2011). The informed consent: A study of the efficacy of informed consents and the associated role of language barriers. *Journal of Surgical Education*, 68(2), 143-147.
- Corrigan, J. M., Donaldson, M. S., Kohn, L. T., McKay, T., & Pike, K. C. (1999). To err is human: Building a safer health system. Retrieved from

- <https://books.google.com/books?hl=en&lr=&id=Jj25GILKXSgC&oi=fnd&pg=PT25&dq=Kohn+LT,+Corrigan+JM,+Donaldson+MS+editors.To+err+is+human:+building+a+saf+er+health+system.Washington,+D.C.:+National+Academy&ots=bHmctnN36F&sig=N-z5zHkJNnuZL19Ep-0N9twWmQI#v=onepage&q&f=false>.
- Diamond, L. C., Wilson-Stronks, A., & Jacobs, E. A. (2010). Do hospitals measure up to the national culturally and linguistically appropriate services standards? *Medical Care*, 48(12), 1080-1087.
- Divi, C., Koss, R., Schmaltz, S., & Loeb, J. (2007). Language proficiency and adverse events in US hospitals: A pilot study. *International for Quality in Health Care*, 19(2), 60-67. doi: 10.1093/intqhc/mz1069.
- Hunt, S. & Isgur, B. (2013). The race to 2014: Health reform and the 30 million newly insured. *PwC Health Research Institute*. Retrieved from <http://www.pwc.com/hri>.
- International Business Machines. (2016). *IBM SPSS statistics*. Retrieved from <http://www.ibm.com/analytics/us/en/technology/spss/>
- Jackson, E. B. (2011). Evaluating knowledge and attitudes of graduate nursing students regarding pain. *University of South Florida Scholar Commons*, 1-38. Retrieved September 18, 2016, from <http://scholarcommons.usf.edu/cgi/viewcontent.cgi?article=4360&context=etd>
- Joint Commission. (2015). *Challenges to LEP patients*. Retrieved from [http://www.jointcommission.org/topics/health\\_equity.aspx](http://www.jointcommission.org/topics/health_equity.aspx).
- Krogstad, J.M. (2015). Reflecting a racial shift, 78 counties turned majority-minority since 2000. Retrieved from <http://www.pewresearch.org/fact-tank/2015/04/08/reflecting-a-racial-shift-78-counties-turned-majority-minority-since-2000/>.

- Lindholm, M., Hargraves, L., Ferguson, W.J., & Reed, G. (2012). Professional language interpretation and inpatient length of stay and readmission rates. *Journal of General Internal Medicine*, 27(10), 1294-1299.
- Patel, D. N., Wakeam, E., Genoff, M., Mujawar, I., Ashley, S. & Diamond, L. (2015). Preoperative consent for patients with limited English proficiency. *Journal of Surgical Research*, 200(2), 514-522. doi:10.1016/j.jss.2015.09.033
- Qualtrics. (2016). *Applications*. Retrieved from <https://www.qualtrics.com/>
- Quan, K. & Lynch, J. (2011). The high cost of language barriers in medical malpractice. University of California, Berkeley National Health Law Program.
- Ramirez, D., Engel, K. G., & Tang, T. S. (2008). Language interpreter utilization in the emergency department setting: A clinical review. *Journal of Health Care for the Poor and Underserved*, 19(2), 352-62.
- Ryan, C. (2011). Language use in the United States: 2011 American community survey reports. *United States Census Bureau*. Retrieved from <https://www.census.gov/prod/2013pubs/acs-22.pdf>.
- Tschurtz, B. A., Koss, R. G., Kupka, N. J., & Williams, S. C. (2011). Language services in hospitals: Discordance in availability and staff use/practitioner application. *Journal of Healthcare Management*, 56(6), 403-418.
- U. S. Department of Health and Human Services. (2016a). *The affordable care act: Section by section*. Retrieved from <http://www.hhs.gov/healthcare/about-the-law/read-the-law/index.html#>.
- U.S. Department of Health and Human Services. (2016b). *What are the national CLAS standards?* Retrieved from <https://www.thinkculturalhealth.hhs.gov/content/>

clas.asp.

U.S. English Foundation. (2016). *Many languages, one America*. Retrieved from

<http://www.usefoundation.org/view/29>.

West, A. M., Bittner, E. A., & Ortiz, V. E. (2014). The effects of preoperative, video-assisted anesthesia education in Spanish on Spanish-speaking patients' anxiety, knowledge, and satisfaction: A pilot study. *Journal of Clinical Anesthesia*, 26(4), 325-329. doi:

10.1016/j.jclinane.2013.

Wilson, C. (2013). Patient safety and healthcare quality: The case for language access.

*International Journal of Health Policy and Management*, 1(4), 251-253.